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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,482

03/17/2006

Franck Fournel

(BIF023237 US)

2263

90678

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09/02/2009

Commissariat a l'Energie Atomique/BHGL

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EXAMINER

ULLAH, ELIAS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,482	Applicant(s) FOURNEL ET AL.	
	Examiner ELIAS ULLAH	Art Unit 2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>65/27/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to an amendment filed on 5/27/2009.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-13, 15, 17, 22 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakazato et al. (Nakazato, EPO 0410679) of IDS record.

With regard to claims 1 and 28, Nakazato shows a method of producing a complex structure (Fig. 1), the structure being adapted to be dissociated in a separation region, the method by comprising assembling two substrates (1a and 1b) at respective connecting faces thereof (Fig. 1(B)) wherein prior to assembly (Fig. 1(A)), a tangential stress state difference is created between the two connecting faces by applying mechanical forces curve to curve each of the two substrates (Fig. 1, wherein both substrate have concave and convex surface see col. 7, lines 30-40 and furthermore prior to bonding weight pressure been applied to the substrate see col. 1, lines 46-50) wherein the tangential stress state difference is configured to produce a predetermined stress (due to weight pressure a predetermined stress is created on in both substrates) within the complex structure during dissociation of the complex structure.

With regard to claim 2, Nakazato shows the tangential stress state difference between the connecting face (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) is selected to minimize the stress in the separation region at the moment of dissociation (a predetermined stress is gain in the both substrates due to weight pressure).

With regard to claim 3, Nakazato shows curving the two substrates 1a, ab comprising curving so that the comprise respectively concave and convex face (col.7, lines 30-40).

With regard to claim 4, Nakazato shows curving the two substrate 1a and 1b comprises curving (col.7, lines 30-40) so that the connecting face comprises complementary faces (Fig. 1).

With regard to claim 5, Nakazato shows curving the two substrates 1a and 1b comprises curving (Fig. 1) so that the connecting faces (Fig. 1) comprise respectively spherical concave and spherical convex faces (Fig. 1).

With regard to claim 6, Nakazato shows applying mechanical forces comprises creating a pressure (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) difference between the connecting faces (Fig. 1).

With regard to claim 7, Nakazato shows creating a pressure difference between the connecting faces (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) comprises aspirating one of the two substrate onto a concave perform (col.7, lines 30-

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40 and Fig. 1) having a suitable profile and imparting the profile to a face of the one substrate and wherein the one substrate rests on the concave perform at its periphery (Fig. 1).

With regard to claim 8, Nakazato shows creating a pressure difference between the connecting faces (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) comprises aspirating one of two substrates (1a, 1b) onto a concave perform having a suitable profile the one substrate and wherein the one substrate on the concave perform at its periphery (col.7, lines 30-40 and Fig. 1) on seal bonding the cavity (Fig. 1, 1c wherein oxide film 1c seal the bonding the cavity).

With regard to claims 9-10, Nakazato shows applying mechanical force (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) comprises deforming one of the two substrate 1a, ab between complementary first and second performs (col.7, lines 30-40 and Fig. 1), one of which is concave (col.7, lines 30-40 and Fig. 1) and the other of which is convex and imparting selected profiles to the connecting face (Fig. 1).

With regard to claim 11, Nakazato shows the method wherein the first complementary perform (1c, wherein oxide film 1c has complementary perform on both substrate 1a, 1b see Fig. 1) comprises the other of the two wherein the substrate is curved to have a selected profile (Fig. 1).

With regard to claim 12, Nakazato shows applying mechanical forces comprises applying mechanical forces simultaneously to the two substrates (col.1, lines 45-54),

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wherein both substrates (1a, 1b) imparted before curving see also (before curving perform of 1c applied on both substrates 1a and 1b see col.2, lines 15-25) by deforming the substrates 1a and 1b (Fig. 1) between two performs having selected profiles to be imparted to the connecting faces (Fig. 1).

With regard to claim 13, Nakazato shows applying mechanical forces comprises applying mechanical forces to at least one of the substrate 1a and 1b by means of a perform comprising a mold (wherein perform is oxide film 1c see col. 2, lines 12-15) and preform comprises a porous mold (wherein oxide film .

With regard to claim 15, Nakazato shows applying mechanical force comprises applying mechanical forces (as discussed above claim 1, due to weight pressure prior to assembly a predetermined stress is gain in the both substrate see col. 1, lines 46-50) to two substrates 1a and 1b using at least one deformable preform 1c (wherein preform 1c curve in Fig. 1 (a) and deformed flat in Fig. 1(C).

With regard to claim 17, Nakazato shows the method comprising treating the connecting faces to facilitate bonding (col. 2, lines 30-35).

With regard to claim 22, Nakazato shows the two substrates (1a and 1b) are assembled by means of a flow layer (oxide film 1c on the bottom side of the substrate 1b se fig. 1(c).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato et al. (Nakazato, EPO 0410679) of IDS record in view of Ishizaki et al. (Ishizaki, US 6,485,533).

With regard to claim 14, Nakazato fails to teach the method wherein the preform comprises a porous mold.

However, Ishizaki teaches the preform comprises a porous mold (col. 9, lines 35-50). At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to use a porous mold for a preform teaching of Ishizaki in the Nakazato method of producing a complex structure because porosity of mold can be adjusted for adjusting the pressure or temperature so selective bonding can be done as taught by Ishizaki in (col. 10, lines 36-50).

7. Claims 18, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato et al. (Nakazato, EPO 0410679) of IDS record.

With regard to claim 18, Nakazato teaches the two substrates (1a and 1b) are assembled by direct contact (Fig. 1), but fails to teach specifically bonding will prevent air from being trapped between the connecting faces. However, it is obvious in the bonding process disclose by Nakazato in (col. 6, lines 10-15, wherein substrates are bonded to each other with an oxide film 1c) also prevent air from being trapped between the connecting faces.

With regard to claims 23-25, Nakazato teaches the two substrates are assembled (Fig. 1E), and preformed (Fig. 2A-2B) but fails to teach specific temperature range i.e. two substrates are assembled at a temperature higher than room temperature. However, it would have been obvious to one of ordinary skill in art to use teaching Nakazato general temperature range in (col. 2, lines 15-34) and the same time bonding temperature will heat preformed (col.2, lines 15-34) in the range as claimed, because it has been held that where the general conditions of the claims are discloses in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. MPEP 2144.05

8. Claims 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato et al. (Nakazato, EPO 0410679) of IDS record in view of Gaud et al. (Gaud, 6,256,864) of record.

With regard to claim 16, Nakazato teaches assembling the two substrates 1a and 1b, comprises thermal oxidize bonding (col. 2, lines 15-25), but fails to molecular bonding between two substrates.

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Gaud teaches a molecular bonding between two substrates (col. 5, lines 30-36).

At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to use molecular bonding teaching of Gaud in the method of complex structure of Nakazato, because it is typical process in the prior art the bonding comprises molecular bonding or adhesive bonding and etc. as taught by Gaud in (col. 5, lines 30-36).

9. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato et al. (Nakazato, EPO 0410679) of IDS record in view of Gang (US 2002/0048949) of record.

With regard to claims 19-21, Nakazato teaches bonding between two substrates (1a, and 1b), but fails to teach piercing at least one of the two substrates comprises piercing the substrate its center and at the edge.

However, Gang teaches piercing 156 (Fig. 14) at least one of the two substrates comprises piercing the substrate its center and at the edge (Fig. 14). At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to piercing the substrates teaching of Gang in the method of complex structure of Nakazato, because by piercing the substrate helps to interconnect between tow substrates or chips as taught by Gang in [0008].

Response to Arguments

10. Applicant's arguments with respect to claims 1-25 and 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS ULLAH whose telephone number is (571)272-1415. The examiner can normally be reached on weekdays, between 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on (571) 272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elias Ullah/
Examiner, Art Unit 2892

/Thao X Le/
Supervisory Patent Examiner, Art
Unit 2892